IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

THE NIELSEN COMPANY (US), LLC,	)	
	)	
Plaintiff,	)	
	)	C.A. No. _____
v.	)	
	)	**JURY TRIAL DEMANDED**
TVISION INSIGHTS, INC.,	)	
	)	
Defendant.	)	

COMPLAINT FOR PATENT INFRINGEMENT

The Nielsen Company (US), LLC ("Nielsen" or "Plaintiff"), for its Complaint against Defendant TVision Insights, Inc. ("TVision" or "Defendant"), alleges as follows:

NATURE OF THE ACTION

1. This is an action for patent infringement brought against Defendant for infringement of United States Patent No. 11,470,243 ("the '243 Patent").

PARTIES

2. Plaintiff The Nielsen Company (US), LLC is organized and existing under the laws of the State of Delaware, with its principal place of business at 85 Broad Street, New York, New York 10004.

3. According to public records, Defendant TVision Insights, Inc. is organized and existing under the laws of the State of Delaware.

JURISDICTION AND VENUE

4. This is an action for patent infringement arising under the Patent Act, 35 U.S.C. §§ 1 *et seq.* This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has personal jurisdiction over Defendant because Defendant is a Delaware corporation, and on information and belief, regularly transacts business in Delaware. Defendant has a registered agent in Delaware: The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801.

6. Venue is proper pursuant to 28 U.S.C. § 1400(b) because Defendant resides in this District.

FACTUAL BACKGROUND

7. Founded in 1923 by Arthur C. Nielsen, Nielsen is the media industry's leading data and analytics company. Nielsen fuels the industry with an accurate understanding of what people watch and listen to.

8. Measuring across all channels and platforms – from traditional linear television to streaming TV to social media and on-line video/audio platforms – Nielsen helps its clients and partners optimize the value of their marketing investments and growth strategies. Nielsen offers measurement and analytics services in nearly 60 countries.

9. Nielsen is a leading innovator in the fields of audience measurement and audio automatic content recognition ("ACR") and has been awarded numerous patents for its inventions in these fields, including the '243 Patent. Nielsen has invested millions of dollars in its audience measurement and audio ACR inventions.

THE ASSERTED PATENT

10. The '243 Patent, entitled "Methods and Apparatus to Capture Images," was duly and legally issued on October 11, 2022. A true and correct copy of the '243 Patent is attached hereto as Exhibit A.

11. Nielsen is the assignee and owner of all right, title, and interest in the '243 Patent. The '243 Patent is valid and enforceable.

12. The '243 Patent is directed to, among other things, particular specific methods and apparatuses for measuring media audiences. (*See, e.g.*, the '243 Patent, Ex. A, Claims 4-6, 8, 11-14, 18-20.) Measurement is accomplished through, among other things, determining information about audience members by comparing data about the members' heads or faces to known reference information. (*See id.*)

13. More specifically, the '243 Patent relates to, among other things, methods and apparatuses for audience measurement by: (i) generating an audio signature of media content presented by a television in a media exposure environment; (ii) based on the audio signature, obtaining content identifying data corresponding to the presented media content; (iii) analyzing a sequence of images of the media exposure environment to detect a head; (iv) reducing the resolution of one image of the sequence of images; (v) generating a facial signature from a region of a second image of the sequence of images corresponding to a location of the head in the reduced-resolution image; (vi) comparing the generated facial signature to a database of facial signatures; and (iv) determining the identity of the audience member and the orientation of the audience member's head. (*See, e.g.*, the '243 Patent, Ex. A, Claims 4, 5.)

14. The declaration of Pierre Moulin ("Moulin Decl."), attached hereto as Exhibit B, is hereby incorporated by reference into this Complaint.

15. In certain prior art audience measurement systems, a series of images of the media exposure environment (*e.g.*, a living room with a television) is collected over a period of time. (Moulin Decl., Ex. B, ¶ 26.) From that series of images, those systems determine information about audience members present. (*Id.*, ¶ 26, (citing the '243 Patent, Ex. A, 1:56-2:3).) Because

the collected images are taken over a period of time, information about audience members can be tracked over time and correlated to particular frames or segments of the media content being displayed on the television. (Moulin Decl., Ex. B, ¶ 26.)

16. To determine the identities of audience members, certain prior art audience measurement systems have used facial recognition. (Moulin Decl., Ex. B, ¶ 27 (citing the '243 Patent, Ex. A, 2:42-56).) To accurately perform facial recognition analysis on a captured image of a media exposure environment, the image must have both sufficiently high resolution (*i.e.*, a sufficiently large density of pixels) and sufficiently high contrast (*i.e.*, sufficiently different brightness levels between audience members and their surroundings). (*Id.*, ¶ 27 (citing the '243 Patent, Ex. A, 2:42-3:3).) To obtain such an image, the media exposure environment must have sufficient lighting. (*Id.*, ¶ 27 (citing the '243 Patent, Ex. A, 2:57-3:3).) Because television rooms typically have poor ambient lighting, some audience measurement systems employ their own illumination source every time an image of sufficiently high resolution and sufficiently high contrast is to be collected. (*Id.*, ¶ 27 (citing the '243 Patent, Ex. A, 2:57-3:3).)

17. There are several disadvantages of having to ensure that the media exposure environment is well-illuminated. (*See* Moulin Decl., Ex. B, ¶ 28.) The most apparent disadvantage of a system that requires substantial illumination all the time is that if the environment is poorly-lit, it may simply be impossible to collect satisfactory images. (*Id.*) Or, in such a poorly-lit environment, an illumination source may be required. (*Id.*) But even if such an illumination source is available, there are numerous disadvantages. First, use of an illumination source is a significant power drain. (*Id.*) Second, frequent use of an illumination source necessitates its frequent replacement. (*Id.*) Third, an illumination source creates excess heat that must be controlled with heat sinking devices. And fourth, an illumination source tends to annoy people, which in turn

creates problems maintaining panelist participation. (*Id.*, ¶ 28 (citing the '243 Patent, Ex. A, 3:4-30).)

18. The '243 Patent discloses that for operations other than facial recognition, it is not necessary to have a high-resolution image. (*See* Moulin Decl., Ex. B, ¶ 29.) Instead, a reduced-resolution image may be used for actions such as determining the location and head-orientation of audience members. (*Id.*) However, the image used for those actions must have sufficiently high contrast. (*Id.*, ¶ 29 (citing the '243 Patent, Ex. A, 3:31-4:14).) To that end, the '243 Patent discloses that a high-contrast, low-resolution image (sufficient for actions such as determining the location and head-orientation of audience members) can be taken without having to ensure a well-illuminated media exposure environment. (*Id.*, Ex. B, ¶ 29 (citing the '243 Patent, Ex. A, 3:31-4:14).) In particular, the '243 Patent discloses that in exchange for loss of resolution, techniques such as "pixel binning" can be used to increase the contrast of images that are not well-illuminated. (*Id.*, ¶ 29 (citing the '243 Patent, Ex. A, 3:31-62).)

19. The '243 Patent discloses that because the vast majority of the captured images of the media exposure environment are not used for facial recognition, it is not necessary to have a well-illuminated environment for capturing the vast majority of images (or all images, if accurate facial recognition is not required). (Moulin Decl., Ex. B, ¶ 30.) For this reason, the '243 Patent refers to capturing images in a potentially poorly-illuminated environment as "majority capture mode," and it refers to capturing images in a necessarily well-illuminated environment as "minority capture mode." (*Id.*, ¶ 30 (citing the '243 Patent, Ex. A, 3:63-4:14).)

20. Using low-resolution images for activities other than facial recognition carries the benefit of not needing a well-lit environment. (Moulin Decl., Ex. B, ¶ 31.) This, in turn, also carries the benefit of minimizing (or eliminating, if accurate facial recognition is not required) the

use of any illumination source, which in turn has the benefit of saving power, reducing heat, reducing illumination source replacement costs, and reducing panelist annoyance. (*Id.*, ¶ 31 (citing the '243 Patent, Ex. A, 3:4-30).) Furthermore, the use of low-resolution images for activities other than facial recognition decreases the system's burdens of computation and storage. (Moulin Decl., Ex. B, ¶ 31.) These burdens are decreased with lower resolution because lower-resolution images have fewer pixels from which data is analyzed and stored. (*Id.*) For example, if a full-resolution image contains 400,000 pixels, a reduced-resolution image might instead use groups of four pixels to form pixel blocks, effectively resulting in a 100,000-pixel reduced-resolution image. (*Id.*) And finally, an additional benefit of using low-resolution resolution images for activities other than facial recognition is that low-resolution images may be formed by applying contrast-increasing processing (such as pixel binning) to higher-resolution images, resulting in higher-contrast images. (*Id.*) This increased contrast allows improved determination of head detection, location, and orientation because it provides for easier distinction between the head and its surroundings. (*Id.*)

21. Claim 4 of the '243 Patent (which incorporates the limitations of claim 1) recites analyzing a sequence of images of a media exposure environment obtained by a camera to detect the head of an audience member. (Moulin Decl., Ex. B, ¶ 32.) The claim further recites reducing the resolution of a first image of the sequence of images and determining the orientation of the audience member's head with respect to the camera, based on the reduced-resolution image. (*Id.*) Determining the orientation of an audience member's head based on a reduced-resolution image was not well-understood, routine, or conventional as of December 15, 2011 (the filing date of the parent application from which the '243 Patent issued). (*Id.*)

22. An advantage over the prior art of determining the orientation of an audience member's head based on a reduced-resolution image, as recited in claim 4, is that a reduced-

resolution image can be obtained from an image collected in a poorly-illuminated environment. (Moulin Decl., Ex. B, ¶ 33.) This is so because, as explained above, a poorly-illuminated image can undergo processing that reduces its spatial resolution in exchange for an increase in contrast level. (*Id*.) A further advantage over the prior art of determining the orientation of an audience member's head based on a reduced-resolution image is that processing such images requires fewer computational and storage resources than determining head orientation based on a higher-resolution image (such as a high-resolution image that would be suitable for facial recognition analysis). (*Id*.) This is so, as explained above, because a reduced-resolution image contains fewer pixels from which data must be processed and stored. (*Id*.) And finally, another advantage over the prior art of determining the orientation of an audience member's head based on a reduced-resolution image is that low-resolution images may be formed by applying contrast-increasing processing (such as pixel binning) to higher-resolution images, resulting in higher-contrast images. (*Id*.) This increased contrast allows improved determination of head orientation because it provides for easier distinction between the head and its surroundings. (*Id*.)

23. Claim 5 of the '243 Patent incorporates the limitations of claim 4, and thus, its approach has the same advantages over the prior art as claim 4. (Moulin Decl., Ex. B, ¶ 34.)

24. In addition, claim 5 of the '243 Patent recites generating a facial signature from a region of a second (higher-resolution) image corresponding to the location of the head in the reduced-resolution image, and comparing the generated facial signature to a database of facial signatures. (Moulin Decl., Ex. B, ¶ 35.) In other words, the claim recites finding the location of the head in the first image, and using that location in the second image (which is higher-resolution than the first image) for the generation of a facial signature. (*Id*.) That facial signature is compared to reference facial signatures for identification of the audience member. (*Id*.) The approach of

this claim was not well-understood, routine, or conventional in the prior art (*i.e.*, as of December 15, 2011). (*Id.*) As compared to the prior art, the approach of claim 5 is an improvement because it employs reduced-resolution images where possible (*i.e.*, when locating the head). In turn, as explained above, the advantages of using reduced-resolution images are (1) the ability to accomplish most operations in a poorly-illuminated environment; (2) reduction in computational and storage burdens (due to fewer pixels being processed and stored); and (3) increased contrast resulting from the ability to form low-resolution images by applying contrast-increasing processing to higher-resolution images (resulting in improved head location and orientation determination). (*Id.*)

25. Claim 6 of the '243 Patent incorporates the limitations of claim 4, and thus, its approach has the same advantages over the prior art as claim 4. (Moulin Decl., Ex. B, ¶ 36.)

26. In addition, claim 6 of the '243 Patent recites identifying a region corresponding to the head within the first image from which the reduced-resolution image was obtained, analyzing a portion corresponding to the identified region in a second (higher-resolution) image, and determining that the head matches a known person. (Moulin Decl., Ex. B, ¶ 37.) In other words, claim 6 recites finding the location of the audience member's head in the reduced-resolution image, and using that location in a higher-resolution image for an analysis that allows determination of the identity of the audience member. (*Id.*) The approach of this claim was not well-understood, routine, or conventional in the prior art. (*Id.*) As compared to the prior art, the approach of claim 6 is an improvement because it employs reduced-resolution images where possible (*i.e.*, when locating the head). In turn, as explained above, the advantages of using reduced-resolution images are (1) the ability to accomplish most operations in a poorly-illuminated environment; (2) reduction in computational and storage burdens (due to fewer pixels being processed and stored);

and (3) the opportunity to form low-resolution images through the use of contrast-increasing processing. (*Id.*)

27. Claim 8 of the '243 Patent incorporates the limitations of claim 6, and thus, its approach has the same advantages over the prior art as claim 6. (Moulin Decl., Ex. B, ¶ 38.)

28. Claim 11 of the '243 Patent (which incorporates the limitations of claim 9) recites a system that analyzes a first image of a media exposure environment collected by a camera to detect the head of an audience member. (Moulin Decl., Ex. B, ¶ 39.) The claim further recites that the system reduces the resolution of the first image and determines the orientation of the audience member's head with respect to the camera, based on the reduced-resolution image. (*Id.*) Determining the orientation of an audience member's head based on a reduced-resolution image was not well-understood, routine, or conventional as of December 15, 2011 (the filing date of the parent application from which the '243 Patent issued). (*Id.*)

29. An advantage over the prior art of determining the orientation of an audience member's head based on a reduced-resolution image, as recited in claim 11, is that a reduced-resolution image can be obtained from an image collected in a poorly-illuminated environment. (Moulin Decl., Ex. B, ¶ 40.) This is so because, as explained above, a poorly-illuminated image can undergo processing that reduces its resolution in exchange for an increase in contrast level. (*Id.*) A further advantage over the prior art of determining the orientation of an audience member's head based on a reduced-resolution image is that processing such images requires fewer computational and storage resources than determining head orientation based on a higher-resolution image (such as a high-resolution image that would be suitable for facial recognition analysis). (*Id.*) This is so, as explained above, because a reduced-resolution image contains fewer pixels from which data must be processed and stored. (*Id.*) And finally, another advantage over

the prior art of determining the orientation of an audience member's head based on a reduced-resolution image is that low-resolution images may be formed by applying contrast-increasing processing (such as pixel binning) to higher-resolution images, resulting in higher-contrast images. (*Id.*) This increased contrast allows improved determination of head orientation because it provides for easier distinction between the head and its surroundings. (*Id.*)

30. Claim 12 of the '243 Patent incorporates the limitations of claim 11, and thus, its approach has the same advantages over the prior art as claim 11. (Moulin Decl., Ex. B, ¶ 41.)

31. In addition, claim 12 of the '243 Patent recites identifying a region corresponding to the head within the first image from which the reduced-resolution image was obtained, analyzing a portion corresponding to the identified region in a second (higher-resolution) image, and determining whether the head matches a known person. (Moulin Decl., Ex. B, ¶ 42.) In other words, claim 12 recites finding the location of the audience member's head in the reduced-resolution image, and using that location in a higher-resolution image for an analysis that allows determination of the identity of the audience member. (*Id.*) The approach of this claim was not well-understood, routine, or conventional in the prior art. (*Id.*) As compared to the prior art, the approach of claim 12 is an improvement because it employs reduced-resolution images where possible (*i.e.*, when locating the head). In turn, as explained above, the advantages of using reduced-resolution images are (1) the ability to accomplish most operations in a poorly-illuminated environment; (2) reduction in computational and storage burdens (due to fewer pixels being processed and stored); and (3) the opportunity to form low-resolution images through the use of contrast-increasing processing. (*Id.*)

32. Claim 13 of the '243 Patent incorporates the limitations of claim 12, and thus, it has the same advantages over the prior art as claim 12. (Moulin Decl., Ex. B, ¶ 43.)

33. Claim 14 of the '243 Patent incorporates the limitations of claim 11, and thus, its approach has the same advantages over the prior art as claim 11. (Moulin Decl., Ex. B, ¶ 44.)

34. In addition, claim 14 of the '243 Patent recites generating a facial signature from a region of a second (higher-resolution) image corresponding to the location of the head in the reduced-resolution image, and comparing the generated facial signature to a database of facial signatures. (Moulin Decl., Ex. B, ¶ 45.) In other words, the claim recites finding the location of the head in the first image, and using that location in the second image (which is higher-resolution than the first image) for the generation of a facial signature. (*Id*.) That facial signature is compared to reference facial signatures for identification of the audience member. The approach of this claim was not well-understood, routine, or conventional in the prior art. (*Id*.) As compared to the prior art, the approach of claim 14 is an improvement because it employs reduced-resolution images where possible (*i.e.*, when locating the head). In turn, as explained above, the advantages of using reduced-resolution images are (1) the ability to accomplish most operations in a poorly-illuminated environment; (2) reduction in computational and storage burdens (due to fewer pixels being processed and stored); and (3) the opportunity to form low-resolution images through the use of contrast-increasing processing. (*Id*.)

35. Claim 18 of the '243 Patent (which also incorporates the limitations of claim 16) recites capturing first and second images of a media exposure environment with a camera and analyzing the first image to detect the head of an audience member. (Moulin Decl., Ex. B, ¶ 46.) The claim further recites reducing the resolution of the first image and determining the orientation of the audience member's head with respect to the camera using the reduced-resolution image. (*Id*.) Determining the orientation of an audience member's head based on a reduced-resolution

image was not well-understood, routine, or conventional as of December 15, 2011 (the filing date of the parent application from which the '243 Patent issued). (*Id.*)

36. An advantage over the prior art of determining the orientation of an audience member's head based on a reduced-resolution image, as recited in claim 18, is that a reduced-resolution image can be obtained in a poorly-illuminated environment. (Moulin Decl., Ex. B, ¶ 47.) This is so because, as explained above, a poorly-illuminated image can undergo processing that reduces its resolution in exchange for an increase in contrast level. (*Id.*) A further advantage over the prior art of determining the orientation of an audience member's head based on a reduced-resolution image is that processing such images requires fewer computational and storage resources than determining head orientation based on a higher-resolution image (such as a high-resolution image that would be suitable for facial recognition analysis). (*Id.*) This is so, as explained above, because a reduced-resolution image contains fewer pixels from which data must be processed and stored. (*Id.*) And finally, an additional benefit of determining the orientation of an audience member's head based on a reduced-resolution image is that low-resolution images may be formed by applying contrast-increasing processing (such as pixel binning) to higher-resolution images, resulting in higher-contrast images. (*Id.*) This increased contrast allows improved determination of head orientation because it provides for easier distinction between the head and its surroundings. (*Id.*)

37. Claim 19 of the '243 Patent incorporates the limitations of claim 18, and thus, its approach has the same advantages over the prior art as claim 18. (Moulin Decl., Ex. B, ¶ 48.)

38. In addition, claim 19 of the '243 Patent recites identifying a region corresponding to the head within the first image from which the reduced-resolution image was obtained, analyzing a portion corresponding to the identified region in a second (higher-resolution) image,

and determining whether the head matches a known person. (Moulin Decl., Ex. B, ¶ 49.) In other words, claim 19 recites finding the location of the audience member's head in the reduced-resolution image, and using that location in a higher-resolution image for an analysis that allows determination of the identity of the audience member. (*Id.*) The approach of this claim was not well-understood, routine, or conventional in the prior art. (*Id.*) As compared to the prior art, the approach of claim 19 is an improvement because it employs reduced-resolution images where possible (*i.e.*, when locating the head). In turn, as explained above, the advantages of using reduced-resolution images are (1) the ability to accomplish most operations in a poorly-illuminated environment; (2) reduction in computational and storage burdens (due to fewer pixels being processed and stored); and (3) increased contrast resulting from the ability to form low-resolution images by applying contrast-increasing processing to higher-resolution images (resulting in improved head location and orientation determination). (*Id.*)

39. Claim 20 of the '243 Patent includes the limitations of claim 19, and thus, it has the same advantages over the prior art as claim 19. (Moulin Decl., Ex. B, ¶ 50.)

THE INFRINGING SYSTEM AND METHOD

40. Defendant is a data and analytics company that measures how people watch TV. Defendant "started out by measuring attention on linear TV" (*see* Allison Schiff, *TVision Insights: 'Ratings Only Tell Part of the Story'*, https://www.adexchanger.com /tv-and-video/tvision-insights-ratings-only-tell-part-of-the-story/ ("AdExchanger Article"), attached hereto as Exhibit C), but has since become the "go-to-choice" for Nielsen's measurement rivals, as reported by AdAge, by providing panel measurement data to them to compete directly with Nielsen's products and service offerings. (*See TVision is the go-to-choice for Several Nielsen Rivals*, https://www.tvisioninsights.com/resources/adage-mrc-panel-data ("AdAge Article"),

attached hereto as Exhibit D). Defendant collects data from a panel of TV viewers that opt-in to be part of the panel. (*See TVision, "Join the TVision Panel"*, https://www.mytvpanel.com/video at 00:50-03:16.) Defendant's former President and COO, Luke McGuinness, stated that "[w]e are like Nielsen in that we use a panel methodology." (*See* AdExchanger Article, Ex. C.)

41. Defendant's panel includes at least 5,000 homes (approximately 15,000 persons) in the United States. (*Id.*; Alison Weissbrot, *4 Challenges the Industry will Face as it Breaks Away from Nielsen*, https://www.campaignlive.com/article/4-challenges-industry-will-face-breaks-away-nielsen/1726140?DCMP=EMC-CONTheCampaignFix&bulletin=the-campaign-fix ("CampaignLive Article"), attached hereto as Exhibit E.) According to TVision CEO Yan Liu and various press accounts, Defendant's panelists are located in and around Boston, Chicago, Dallas, New York, Philadelphia, Atlanta, Seattle, and Los Angeles. (https://www.youtube.com/watch?v=RCtw7NxjalQ (at 00:41)); *see also* Sapna Maheshwari, *For Marketers, TV Sets are an Invaluable Pair of Eyes*, https://www.nytimes.com/2017/02/25/business/media/tv-viewers-tracking-tools.html, attached hereto as Exhibit F; Adam Jacobson, *For TV's Ad Future, All Eyes are on Attention Metrics*, https://www.rbr.com/tvision-0926/ ("RBR"), attached hereto as Exhibit G.)

42. Defendant uses a system ("the Infringing System") and employs a method ("the Infringing Method") as components of its audience measurement products and services.

43. The Infringing System, which executes the Infringing Method, includes a device that Defendant places in each of its panelists' homes ("the Device"). The Infringing Method includes, among other things, the steps of collecting data using at least the Device and processing and analyzing the collected data using the Device and other computer systems and apparatuses.

44. The data Defendant collects and analyzes from its panel can provide second-by-second, person-level insights into how people watch TV, including insights into TV attribution, co-viewing, reach, frequency, and cross-platform management. (*See* Yan Liu, *The Future of Media Measurement: The Role of Panels in Big Data*, https://www.tvisioninsights.com/resources/the-role-of-panels-in-big-data, attached hereto as Exhibit H); *see also Advanced Audience Projections, Powers Person Level Ad Measurement*, https://f.hubspotusercontent00.net/hubfs/3023204/TVision%20Advanced%20Audience%20Projections%20(1).pdf, attached hereto as Exhibit I.)

45. Defendant's CRO and Co-Founder Dan Schiffman has stated that Defendant has filed patent applications on the apparatuses, systems and methods it uses. (*See* Ingrid Lunden, *TVision Raises $6.8M to Take on Nielsen With Thermal eye and Emotion Tracking tech*, https://techcrunch.com/2016/10/26/tvision-raises-6-8m-to-take-on-nielsen-with-thermal-eye-and-emotion-tracking-tech/ ("TechCrunch Article,") attached hereto as Exhibit J) ("Schiffman [who co-founded the company with CEO Yan Liu] told me that TVision already has applications in for two utility patents, one for its computer vision algorithm and another around its analytics.") One such patent application is U.S. Patent Application Publication 2018/0007431 ("the '431 Publication," attached hereto as Exhibit K). Defendant has implemented concepts disclosed in the '431 Publication in the Infringing System and the Infringing Method. (*See* TechCrunch Article, Ex. J; '431 Publication, Ex. K, Abstract and Par. 0029, 31, 42-45, 54, 61, 101, 160-162, 169, 170-172.)

46. According to TVision CEO Yan Liu, "TVision panelists set up [the Device] near their television [and that the Device] is capable of picking up audio and visual signals. . . . TVision then uses ACR to match television content with the viewing data on a second-by-second basis."

(Simran Sabherwal, *Attention Metrics Identify Higher-value Inventory, Improve Campaign Effectiveness*, https://www.exchange4media.com/marketing-news/attention-metrics-identify-higher-value-ad-inventory-improve-campaign-effectiveness-111681.html, (the "Exchange4Media Article,") attached hereto as Exhibit L).)

47. According to the '431 Publication, "[t]he local processor [of the Device] uses audio samples recorded by the microphone 140 to identify the video being played on the display (222). For example, the processor 150 can create a fingerprint of the audio data and use the fingerprint to query a third-party application programming interface (API), which responds to the query with an identification of the video associated with the audio data." ('431 Publication, Ex. K, Par. 0050, 0066.)

48. Not only does Defendant identify the content being watched – it also determines and reports "[w]hich individuals are in the room" and "[i]f they're paying attention to the TV." (*See TVision, TVision Insights*, https://www.tvisioninsights.com, attached hereto as Exhibit M.)

49. The Infringing System, which executes the Infringing Method, includes a webcam mounted on the user's television to capture images of the area of the television. (*See TVision, "Join the TVision Panel"*, https://vimeo.com/295447727/3506f24b2b?embedded=true&source=video_title&owner=90679125 at 1:09.) These images are used to monitor "individual viewing behavior." (*See TVision, TVision Methodology Overview*, https://www.tvisioninsights.com/resources/tvision-methodology-overview, attached hereto as Exhibit N.)

50. The Infringing System and Infringing Method use the images captured by the webcam to detect a user's head appearing in one or more of the images. (*See TVision, Our Technology*, https://www.tvisioninsights.com/our-technology, attached hereto as Exhibit O; *see also* "Inderbir Sidhu – Measuring Audience Attention via Computer Vision & Deep Learning"

("Sidhu Interview"), https://www.youtube.com/watch?v=xnFypL2JXPE at 3:10-3:20, 4:47-5:06, and 5:32-5:47 ("It is key to us to understand the pose information . . . of the audience. . . . We use deep neural nets to get pose information. We detect humans. We track humans. We kind of have trained our own model for tracking. We use something called graph cut algorithms to track the path of people across multiple frames."); *TVision, "Join the TVision Panel,"* https://vimeo.com/295447727/3506f24b2b?embedded=true&source=video_title&owner=90679125 at 1:09 (screen shot below).)

51. In addition, the Infringing System and Infringing Method use computer-vision technology to determine a head pose of the detected head. (*See* Sidhu Interview at 5:32-47 ("But eventually, all of the pose data makes its way to our attention measurement. And that's where we extract out the head pose, the facial features, and all that to compute whether or not somebody is paying attention and what their gaze is.").)

52. For certain operations, the Infringing System and Infringing Method reduce the resolution of images captured by the webcam. (*Id* at 5:20-24 ("We have to shrink the frame before we pass it to the neural net.").)

53. The Infringing System and Infringing Method provide the reduced-resolution images to a deep neural network ("DNN"), which uses those reduced-resolution images to determine the location of the audience member's head and corresponding pose and orientation information. (*Id* at 5:32-47 ("[A]ll of the pose data makes its way to our attention measurement. And that's where we extract out the head pose, the facial features, and all that to compute whether or not somebody is paying attention and what their gaze is.").)

54. Furthermore, the Infringing System and Infringing Method apply facial recognition to images captured by the webcam to detect who is watching the TV. (*See TVision, Our Technology*, https://www.tvisioninsights.com/our-technology, Ex. O.)

55. The Infringing System and Infringing Method use high-resolution images for facial recognition. (*See Mytvpanel, About Us*, https://www.mytvpanel.com/about, attached hereto as Exhibit P ("The system starts out in Training Mode, where it captures headshot images of your household members' faces from forehead-to-chin, ear-to-ear. . . . . The system uses those images to tell the viewers apart and map in their demographics from your household profile.").) This is accomplished by extracting data from a region of a high-resolution image that has been identified by the DNN using a low-resolution image. (*See* Sidhu Interview at 5:32-47.)

56. Defendant licenses and offers to license data that Defendant collects and analyzes from its panel (this data includes information about the content being viewed as determined by audio ACR and about the identities and engagement levels of audience members). Defendant has been and is licensing its data to several Nielsen competitors. (*See* CampaignLive Article, Ex. E.)

The press has made known that Defendant has licensed its data to VideoAmp, iSpot, Xandr, and 605. (*See* AdAge Article, Ex. D.) AdAge reported that Defendant is "the go-to-choice for several Nielsen rivals." (*Id.*)

57. By making, using, offering to sell, and selling the Infringing System and performing the Infringing Method, Defendant is infringing the '243 Patent as further described below, including in the claim charts ("Claim Charts" attached hereto as Exhibit Q,) which are hereby incorporated by reference into this Complaint.

58. By this lawsuit, Nielsen seeks to enjoin Defendant from any further unauthorized use of Nielsen's patented technology, and it seeks to recover damages, including lost profits, increased damages, reasonable attorneys' fees, and other such relief as the Court deems just and proper for Defendant's violation of federal law.

COUNT I
INFRINGEMENT OF THE '243 PATENT

59. Nielsen repeats and re-alleges paragraphs 1-58 as if fully set forth herein.

60. Defendant has infringed and continues to infringe, literally or under the doctrine of equivalents, Claims 4-6, 8, 11-14, and 18-20 of the '243 Patent ("the Asserted Claims") under 35 U.S.C. § 271(a) by making, using, selling and/or offering to sell in the United States, and/or importing into the United States, the Infringing System and by performing the Infringing Method in the United States. Defendant's activities are without license or permission from Nielsen.

61. The Infringing System and the Infringing Method include all elements of the Asserted Claims, either literally or equivalently, as shown in the claim charts (Claim Charts, Ex. Q.)

62. Through the conduct alleged above, Defendant has caused and will in the absence of an injunction continue to cause Nielsen to suffer damages, which in no event are less than a reasonable royalty, and which include, but are not limited to, lost sales and sales opportunities.

63. Defendant has also irreparably harmed Nielsen. Unless and until Defendant is enjoined by this Court from further infringement of the '243 Patent, Nielsen will continue to suffer irreparable injury for which it has no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, Nielsen prays for judgment against Defendant as follows:

A. A judgment that Defendant has infringed the '243 Patent;

B. An order permanently enjoining Defendant and its officers, directors, agents, servants, employees, affiliates, and all others acting in privity or in concert with them, and their parents, subsidiaries, divisions, successors, and assigns, from further acts of infringement of the '243 Patent;

C. An award of damages adequate to compensate Nielsen for Defendant's infringement of the '243 Patent, including increased damages up to three times the amount found or assessed, together with pre-judgment and post-judgment interest and costs, under 35 U.S.C. §§ 154(d) and 284.

D. A judgment that this case is exceptional and an award of Nielsen's reasonable attorneys' fees, costs, and expenses under 35 U.S.C. § 285; and

E. An award of such other and further relief as this Court may deem just and proper.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a trial by jury as to all issues so triable.

Respectfully submitted,

POTTER ANDERSON & CORROON LLP

By: */s/ David E. Moore*

David E. Moore (#3983)
Bindu A. Palapura (#5370)
Brandon R. Harper (#6418)
Carson R. Bartlett (#6750)
Hercules Plaza, 6th Floor
1313 N. Market Street
Wilmington, DE 19801
Tel: (302) 984-6000
dmoore@potteranderson.com
bpalapura@potteranderson.com
bharper@potteranderson.com
cbartlett@potteranderson.com

Attorneys for Plaintiff The Nielsen Company (US), LLC

OF COUNSEL:

Steven Yovits
Constantine Koutsoubas
Melvin Gaddy
KELLEY DRYE & WARREN LLP
333 West Wacker Drive
Chicago, IL 60606
Tel: (312) 857-7070

Clifford Katz
Jolie Brett Schenerman
KELLEY DRYE & WARREN LLP
3 World Trade Center
175 Greenwich Street
New York, NY 10007
Tel: (212) 808-7800

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